EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	14991	(paper paper$1board fibrous near2 web) and (poly$1tetra $1fluoro$1ethylene ptfe teflon syncolon) and (polyimide PI)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/01/06 20:46
L2	1167	(paper paper$1board fibrous near2 web) same (poly$1tetra $1fluoro$1ethylene ptfe teflon syncolon) same (polyimide PI)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/01/06 20:47
L3	9	2 and "162"/$7.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/01/06 20:47
L4	190	2 and "428"/$7.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/01/06 20:54
L5	31	2 and "264"/$7.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/01/06 20:59
L6	30955	(poly$1tetra$1fluoro $1ethylene ptfe teflon syncolon and (polyimide PI)) same (fiber fibre)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/01/06 21:03
L7	3738	((poly$1tetra$1fluoro $1ethylene ptfe teflon syncolon) and (polyimide PI)) same (fiber fibre)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/01/06 21:03

L8	21	7 and "162"/$7.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/01/06 21:04
L9	2806	((poly$1tetra$1fluoro $1ethylene ptfe teflon syncolon) same (polyimide PI)) same (fiber fibre)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/01/06 21:06
L10	6	9 and "162"/$7.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/01/06 21:06
L11	343	9 and "428"/$7.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/01/06 21:08
L12	139	9 and "264"/$7.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/01/06 21:20
L13	12	("5064593" | "5171805" | "5234739" | "5348700" | "5562986").PN. OR ("6133165").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2009/01/06 21:24
L14	10	((MIKIO) near2 (FURUKAWA)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2009/01/06 21:30
L15	151	((MIKIO) near2 (FURUKAWA)).INV.	EPO; JPO; DERWENT	OR	OFF	2009/01/06 21:34
L16	2	((KATSUYUKI) near2 (TOMA)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2009/01/06 21:37
L17	102	((KATSUYUKI) near2 (TOMA)).INV.	EPO; JPO; DERWENT	OR	OFF	2009/01/06 21:38
L18	5	((YOSHINAO) near2 (YAMADA)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2009/01/06 21:40
L19	11	((YOSHINAO) near2 (YAMADA)).INV.	EPO; JPO; DERWENT	OR	OFF	2009/01/06 21:40
L20	273	((AKIRA) near2 (ITO)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2009/01/06 21:41

L21	2414	((AKIRA) near2 (ITO)).INV.	EPO; JPO; DERWENT	OR	OFF	2009/01/06 21:41
L22	3	((NORIHIKO) near2 (MIKI)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2009/01/06 21:41
L23	33	((NORIHIKO) near2 (MIKI)).INV.	EPO; JPO; DERWENT	OR	OFF	2009/01/06 21:42
L24	0	jp-200132189-$.did.	EPO; JPO; DERWENT	OR	OFF	2009/01/06 21:44
L25	2	jp-2001032189-$.did.	EPO; JPO; DERWENT	OR	OFF	2009/01/06 21:44
L26	2	jp-2003096698-$.did.	EPO; JPO; DERWENT	OR	OFF	2009/01/06 21:46
L27	2	jp-02259199-$.did.	EPO; JPO; DERWENT	OR	OFF	2009/01/06 21:48

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PALM INTRANET

Application#	Patent#	PG Pub#	Status	Date Filed	Title	Examiner Name	Inventor Name
10577399	Not Issued	20070084575	030	04/27/2006	COMPOSITE PAPYRACEOUS MATERIAL	FORTUNA,JOSE	TOMA, KATSUYUKI

TOMA KATSUYUKI

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PALM INTRANET

Application#	Patent#	PG Pub#	Status	Date Filed	Title	Examiner Name	Inventor Name
10580404	Not Issued	20070149734	061	05/24/2006	FLUORORESIN AND COATED ELECTRIC WIRE	BUIE,NICOLE	MIKI, NORIHIKO
11663910	Not Issued	20080025861	030	03/27/2007	SLIDING ELEMENT AND FLUID MACHINE	TRIEU,THERESA	MIKI, NORIHIKO
10577399	Not Issued	20070084575	030	04/27/2006	COMPOSITE PAPYRACEOUS MATERIAL	FORTUNA,JOSE	MIKI, NORIHIKO

MIKI NORIHIKO

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Application#	Patent#	PG Pub#	Status	Date Filed	Title	Examiner Name	Inventor Name
29208800	D534203		150	07/07/2004	TAPE CARTRIDGE FOR TAPE PRINTING MACHINE	RADEMAKER,CHARLES	ITO, AKIRA
29208801	D542334		150	07/07/2004	TAPE CARTRIDGE FOR TAPE PRINTING MACHINE	RADEMAKER,CHARLES	ITO, AKIRA
29208802	Not Issued		124	07/07/2004	TAPE CARTRIDGE FOR TAPE PRINTING MACHINE	RADEMAKER,CHARLES	ITO, AKIRA
10916606	6934176	20050052892	150	08/12/2004	SYSTEMS FOR PROGRAMMABLE MEMORY USING SILICIDED POLY-SILICON FUSES	LE,VU	ITO, AKIRA
60833787	Not Issued		159	07/28/2006	SEMICONDUCTOR DEVICE WITH INCREASED BREAKDOWN VOLTAGE		ITO, AKIRA
11499944	Not Issued	20070030062	030	08/07/2006	MATCHING DEVICE FOR AN ANTENNA AND HIGH-FREQUENCY RECEIVER USING THE SAME	VUONG,QUOCHIEN	ITO, AKIRA
60836696	Not Issued		159	08/10/2006	GATE OXIDE FOR ONE TIME PROGRAMMING STRUCTURES		ITO, AKIRA
11580961	Not Issued	20080023760	061	10/16/2006	SEMICONDUCTOR DEVICE WITH INCREASED BREAKDOWN VOLTAGE	NGUYEN,JOSEPH	ITO, AKIRA
11592018	Not Issued	20070102138	071	11/02/2006	COOLING DEVICE AND METHOD OF MANUFACTURING THE SAME	WALBERG,TERESA	ITO, AKIRA
12239974	Not Issued	0	020	09/29/2008	CDMA RECEIVING APPARATUS AND CDMA RECEIVING METHOD		ITO, AKIRA
11628535	Not Issued	20090004227	030	03/05/2007	PERORAL VACCINE CARRIER SYSTEM	WORLEY,CATHY	ITO, AKIRA
11663697	Not Issued	20080310904	030	08/27/2007	TAPE CASSETTE AND TAPE PRINTER	NGUYEN,JUDY	ITO, AKIRA
11885728	Not Issued	20080279605	025	11/26/2007	TAPE CASSETTE AND TAPE PRINTING APPARATUS		ITO, AKIRA
12155628	Not Issued	20080246080	025	06/06/2008	SHALLOW TRENCH ISOLATION (STI) BASED LATERALLY DIFFUSED METAL OXIDE SEMICONDUCTOR (LDMOS)		ITO, AKIRA
12138931	Not Issued	20080313244	020	06/13/2008	METHOD AND SYSTEM FOR DATA PROCESSING WITH DATABASE UPDATE FOR THE SAME		ITO, AKIRA

10577399	Not Issued	20070084575	030	04/27/2006	COMPOSITE PAPYRACEOUS MATERIAL	FORTUNA,JOSE	ITO, AKIRA
11597879	Not Issued	20080003243	061	06/29/2007	ORAL ANTI-PROTOZOIASIS VACCINES BASED ON TRANSGENIC PLANTS	WORLEY,CATHY	ITO, AKIRA
11524721	Not Issued	20080067589	041	09/20/2006	TRANSISTOR HAVING REDUCED CHANNEL DOPANT FLUCTUATION	WOJCIECHOWICZ,EDWARD	ITO, AKIRA
12212102	Not Issued	0	020	09/17/2008	INKJET PRINTING APPARATUS AND METHOD FOR AGITATING INK		ITO, AKIRA
10911720	7161213	20060030092	150	08/05/2004	LOW THRESHOLD VOLTAGE PMOS APPARATUS AND METHOD OF FABRICATING THE SAME	LEE,CALVIN	ITO, AKIRA
10891466	6977107	0	150	07/14/2004	OPTICAL RECORDING MEDIUM AND METHOD FOR MAKING THE SAME	MULVANEY,ELIZABETH	ITOGA, AKIRA
11608038	Not Issued	20070133064	030	12/07/2006	SCANNED IMAGE MANAGEMENT DEVICE	BELLA,MATTHEW	ITOGAWA, AKIRA
10911681	RE39101		150	08/05/2004	SEAT DEVICE OF A VEHICLE	ENGLE,PATRICIA	ITOH, AKIRA
29248765	Not Issued		041	08/31/2006	CATHETER SECTION	GOODMAN,ERIC	ITOH, AKIRA
11883347	Not Issued	20080211126	020	07/31/2007	MOLDING CONDITION SETTING METHOD AND CONTROL METHOD OF INJECTION MOLDING MACHINE		ITOH, AKIRA
29248766	D558338		150	08/31/2006	CATHETER SECTION	GOODMAN,ERIC	ITOH, AKIRA

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Application#	Patent#	PG Pub#	Status	Date Filed	Title	Examiner Name	Inventor Name
10003382	6649260	20020106506	150	12/06/2001	OPTICAL COATING FILM	BISSETT,MELANIE	ITO, AKIRA
10009797	6525058		250	12/13/2001	PHARMACEUTICAL COMPOSITION FOR ORAL USE	REAMER,JAMES	ITO, AKIRA
10469078	6970140	20040080466	150	08/26/2003	ANTENNA APPARATUS AND PORTABLE APPARATUS USING THE SAME	HO,TAN	ITO, AKIRA
10705863	7142833	20040130667	150	11/13/2003	MATCHING UNIT	NGUYEN,DUC	ITO, AKIRA
10773263	6902958	20040157379	150	02/09/2004	METHOD FOR MAKING MOSFET ANTI-FUSE STRUCTURE	DOLAN,JENNIFER	ITO, AKIRA
10799837	6995616	20050077967	150	03/12/2004	POWER AMPLIFIER HAVING CASCODE ARCHITECTURE WITH SEPARATELY CONTROLLED MOS TRANSISTOR AND PARASITIC BIPOLAR TRANSISTOR	CHOE,HENRY	ITO, AKIRA
10767006	7070333	20050077109	150	01/30/2004	LUBRICATION STRUCTURE FOR ROLLING BEARING	HANNON,THOMAS	ITO, AKIRA
10822990	7148858	20040207565	150	04/13/2004	PORTABLE RECEIVER	LE,HOANGANH	ITO, AKIRA
11443171	Not Issued	20070279176	071	05/31/2006	ON-CHIP INDUCTOR USING REDISTRIBUTION LAYER AND DUAL-LAYER PASSIVATION	NGUYEN,TUYEN	ITO, AKIRA
09988262	6513611	20020029913	150	11/19/2001	VEHICLE SPEED CONTROL SYSTEM	AVERY,BRIDGET	ITO, AKIRA
09973390	Not Issued	20020036326	161	10/09/2001	ANALOG-TO-DIGITAL CONVERTER AND METHOD OF FABRICATION	BROCK II,PAUL	ITO, AKIRA
09886053	6628082	20020000780	150	06/22/2001	GLOW STARTER FOR A HIGH PRESSURE DISCHARGE LAMP	PHILOGENE,HAISSA	ITO, AKIRA
09854974	6490416	0	250	05/14/2001	FOCAL PLANE SHUTTER HAVING SYNCHRONOUS CONTACT MEMBER	PERKEY,WILLIAM	ITO, AKIRA
09829591	Not Issued	20010052420	161	04/10/2001	CRIMPING TERMINAL FOR CONNECTION BETWEEN ELECTRIC CABLES	MAYO III,WILLIAM	ITO, AKIRA
11324221	7151660	20060203424	150	01/04/2006	HIGH DENSITY MAZE CAPACITOR	THOMAS,ERIC	ITO, AKIRA

10766201	Not Issued	20040253309	041	01/27/2004	ENTERIC SUSTAINED-RELEASE FINE PARTICLES OF TAMSULOSIN AND ITS SALT AND MANUFACTURING METHOD THEREOF	SASAN,ARADHANA	ITO, AKIRA
10815273	7282479	20040219130	150	03/31/2004	HYPERTHERMIA AGENT FOR MALIGNANT TUMOR COMPRISING CYTOKINE AND MAGNETIC FINE PARTICLES	GODDARD,LAURA	ITO, AKIRA
10355260	7211843	20040037117	150	01/31/2003	SYSTEM AND METHOD FOR PROGRAMMING A MEMORY CELL	WILSON,SCOTT	ITO, AKIRA
10314575	Not Issued	20030107669	161	02/10/2003	IMAGE PICK-UP DEVICE AND PORTABLE ELECTRONIC DEVICE HAVING THE SAME	TRAN,NHAN	ITO, AKIRA
10314984	7016775	20030130777	150	12/10/2002	CONTROLLER AND CONTROL METHOD FOR AN ELECTRIC POWER STEERING APPARATUS	BROADHEAD,BRIAN	ITO, AKIRA
10314622	Not Issued	20030107656	161	12/09/2002	IMAGE PICK-UP DEVICE AND PORTABLE ELECTRONIC DEVICE HAVING THE SAME	HENDERSON,ADAM	ITO, AKIRA
10300510	7283510	20030153277	150	11/20/2002	WIRELESS RECEIVER ESTIMATING POWER OF INTERFERENCE	GENACK,MATTHEW	ITO, AKIRA
29170868	Not Issued		161	11/14/2002	TAPE CARTRIDGE FOR TAPE PRINTING MACHINE	VEYNAR,CARON	ITO, AKIRA
29170477	Not Issued		161	11/07/2002	TAPE CARTRIDGE FOR TAPE PRINTING MACHINE	VEYNAR,CARON	ITO, AKIRA
10263194	6669335	20030025766	150	10/03/2002	INK-JET PRINTING HEAD AND INK-JET PRINTING APPARATUS	NGUYEN,THINH	ITO, AKIRA
10244572	6658735	20030015341	150	09/16/2002	CRIMPING TERMINAL FOR CONNECTION BETWEEN ELECTRIC CABLES	MAYO III,WILLIAM	ITO, AKIRA
29208800	D534203		150	07/07/2004	TAPE CARTRIDGE FOR TAPE PRINTING MACHINE	RADEMAKER,CHARLES	ITO, AKIRA
10871569	7227238	20040222491	150	06/21/2004	INTEGRATED FUSE WITH REGIONS OF DIFFERENT DOPING WITHIN THE FUSE NECK	WILSON,SCOTT	ITO, AKIRA
10862496	Not Issued	20040252629	030	06/07/2004	PILOT MULTIPLEXING METHOD AND OFDM RECEIVING METHOD IN OFDM SYSTEM	AHN,SAM	ITO, AKIRA
10863777	Not Issued	20040254766	132	06/09/2004	ELECTRONIC SYSTEM WITH FIRST AND SECOND ELECTRONIC UNITS ELECTRICALLY WITH EACH OTHER.	KIM,HONG	ITO, AKIRA
10849295	6985387	20040212037	150	05/20/2004	SYSTEM AND METHOD FOR ONE-TIME PROGRAMMED MEMORY THROUGH DIRECT-TUNNELING OXIDE BREAKDOWN	DIAZ,JOSE	ITO, AKIRA
10355237	6798684	20040042274	150	01/31/2003	METHODS AND SYSTEMS FOR PROGRAMMABLE MEMORY USING SILICIDED POLY-SILICON FUSES	LE,VU	ITO, AKIRA
10235709	6796400	20030057011	150	09/06/2002	ELECTRIC POWER STEERING MECHANISM CONTROL METHOD AND ELECTRIC POWER STEERING MECHANISM	YEAGLEY,DANIEL	ITO, AKIRA
10197437	6700176	20040023440	150	07/18/2002	MOSFET ANTI-FUSE STRUCTURE	DOLAN,JENNIFER	ITO, AKIRA

60377238	Not Issued		159	05/03/2002	METHODS AND SYSTEMS FOR PROGRAMMABLE MEMORY USING SALICIDED POLY-SILICON FUSES		ITO, AKIRA
10779775	7040685	20040174038	150	02/18/2004	SEAT STORING STRUCTURE FOR A VEHICLE	ENGLE,PATRICIA	ITO, AKIRA
10739144	Not Issued	20040131022	041	12/19/2003	CHANNEL PREDICTION DEVICE AND METHOD THEREOF	WONG,LINDA	ITO, AKIRA
09954735	6435590	20020011737	150	09/18/2001	SEAT DEVICE OF A VEHICLE	ENGLE,PATRICIA	ITOH, AKIRA
09818942	6627301	20020012816	150	03/28/2001	MAGNETIC RECORDING MEDIUM	RICKMAN,HOLLY	ITOH, AKIRA
10219247	Not Issued	20030032781	161	08/16/2002	DIFFERENTIATION-SUPPRESSIVE POLYPEPTIDE	O'HARA,EILEEN	ITOH, AKIRA
10320650	6696807	20030117097	150	12/17/2002	CONTROL APPARATUS OF ELECTRIC POWER STEERING	MASIH,KAREN	ITOH, AKIRA
10318155	6729435	20030121716	150	12/13/2002	APPARATUS AND METHOD FOR CONTROLLING ELECTRIC POWER STEERING SYSTEM	HURLEY,KEVIN	ITOH, AKIRA
10316912	6795762	20030120407	150	12/12/2002	STEERING APPARATUS CONTROLLER FOR ELECTRIC POWER STEERING APPARATUS	LOUIS JACQUES,JACQUES	ITOH, AKIRA
10270555	7238777	20030092068	150	10/16/2002	AGENTS FOR ADSORPTION AND BRIDGING FOR ADENOVIRUS	HILL,MYRON	ITOH, AKIRA
10219248	7138276	20030022368	150	08/16/2002	DIFFERENTIATION-SUPPRESSIVE POLYPEPTIDE SERRATE-2 AND METHODS OF USE	O'HARA,EILEEN	ITOH, AKIRA
09995593	7141379	20020128197	150	11/29/2001	METHOD OF SUPPRESSING DIFFERENTIATION BY ADMINISTERING A HUMAN SERRATE-1 POLYPEPTIDE	MERTZ,PREMA	ITOH, AKIRA
09855722	6638741	20020049306	150	05/16/2001	DIFFERENTIATION-SUPPRESSIVE POLYPEPTIDE	O'HARA,EILEEN	ITOH, AKIRA
09841597	6704632	20010051845	150	04/25/2001	CONTROLLER FOR VEHICLE STEERING APPARATUS AND METHOD FOR DETECTING ABNORMALITY IN THE CONTROLLER	NGUYEN,THU	ITOH, AKIRA
10681998	6818280	20040086691	150	10/09/2003	RECTANGULAR BRILLIANT-CUT DIAMOND	LONEY,DONALD	ITOH, AKIRA
10057551	6751057	20020109945	150	01/25/2002	MAGNETIC RECORDING/REPRODUCING APPARATUS AND ROTARY HEAD DRUM DEVICE	KLIMOWICZ,WILLIAM	ITOU, AKIRA

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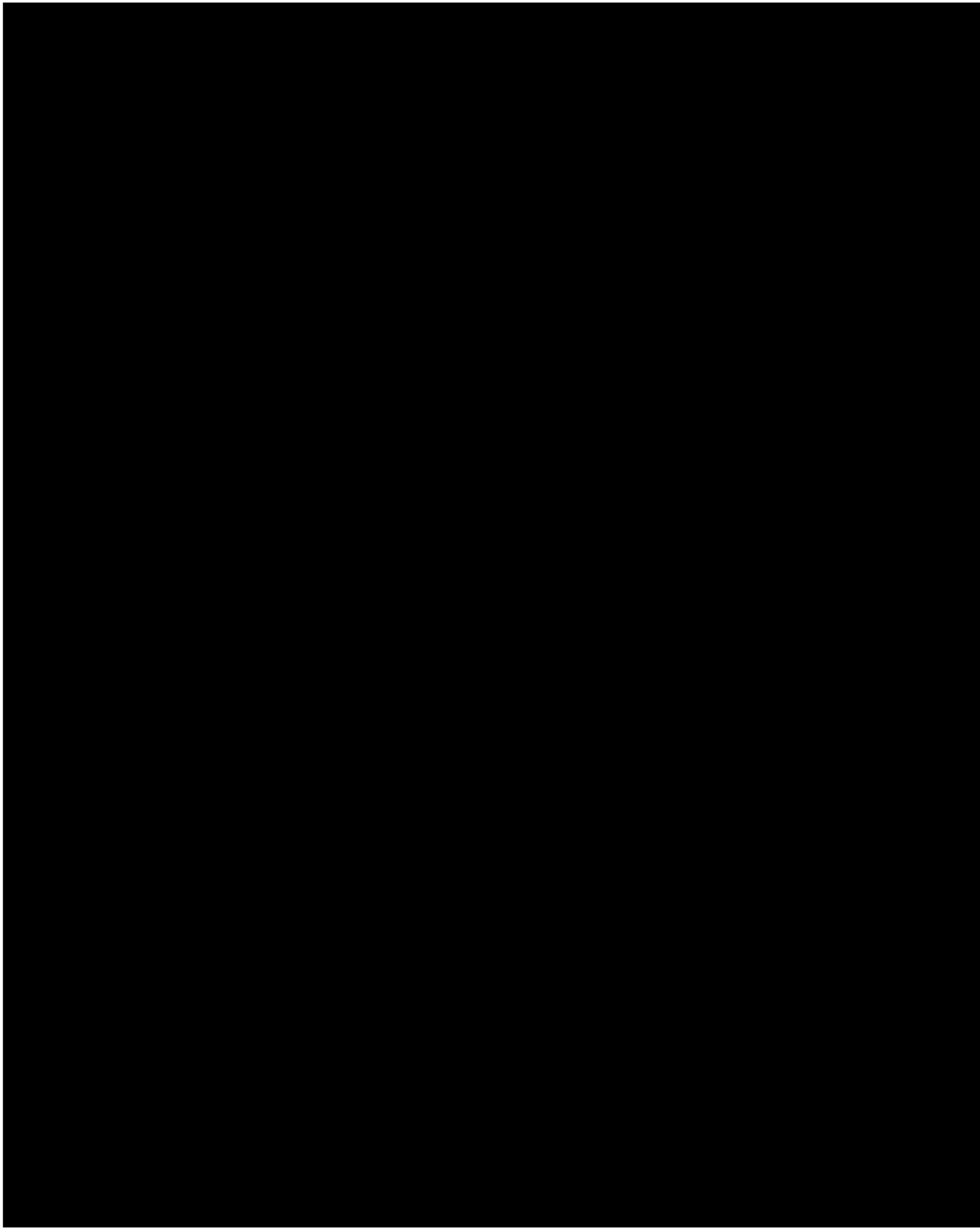

PALM INTRANET

Application#	Patent#	PG Pub#	Status	Date Filed	Title	Examiner Name	Inventor Name
11226247	Not Issued	20060063252	161	09/15/2005	CELL CULTURE METHOD AND CELL SHEET	MITCHELL,LAURA	ITO, AKIRA
11236662	Not Issued	20060200084	041	09/28/2005	SYRINGE	YEH,JENNER	ITO, AKIRA
11251899	Not Issued	20060089770	168	10/18/2005	STEERING CONTROL APPARATUS	MARC,MCDIEUNEL	ITO, AKIRA
11271911	Not Issued	20060121606	161	11/14/2005	CELL CULTURE METHOD AND CULTURED TISSUE	KETTER,JAMES	ITO, AKIRA
11826608	Not Issued	20080019348	030	07/17/2007	COMMUNICATION SYSTEM, COMMUNICATION METHOD, TRANSMITTER, AND RECEIVER	BOST,DWAYNE	ITO, AKIRA
11822354	Not Issued	20070258509	071	07/05/2007	TRANSMISSION METHOD AND TRANSMISSION APPARATUS IN AN OFDM-CDMA COMMUNICATION SYSTEM	TAYONG,HELENE	ITO, AKIRA
11826609	Not Issued	20080020711	030	07/17/2007	WIRELESS SYSTEM	ANDERSON,MATTHEW	ITO, AKIRA
11897039	Not Issued	20080063452	030	08/29/2007	LABEL PRODUCING APPARATUS AND LABEL PRODUCING SYSTEM	NGUYEN,JUDY	ITO, AKIRA
11894825	Not Issued	20080217409	025	08/22/2007	RFID TAG COMMUNICATING APPARATUS		ITO, AKIRA
11663688	Not Issued	20080050160	030	08/27/2007	TAPE PRINTER	NGUYEN,JUDY	ITO, AKIRA
11663686	Not Issued	20080038034	030	08/27/2007	TAPE PRINTER AND TAPE CASSETTE	CHAU,MINH	ITO, AKIRA
11810242	Not Issued	20080031672	030	06/05/2007	LABEL BODY AND LABEL BODY PRODUCING APPARATUS	NGUYEN,JUDY	ITO, AKIRA
11904212	Not Issued	20080107854	030	09/25/2007	LABEL TAPE ROLL, LABEL PRODUCTION CARTRIDGE, LABEL PRODUCING APPARATUS, AND RFID LABEL	CHANG,VICTOR	ITO, AKIRA
11574949	Not Issued	20080032403	030	09/20/2007	PRODUCTION OF CELL CULTURE PRODUCT AND MATERIAL FOR USE IN SAID PRODUCTION	KETTER,JAMES	ITO, AKIRA
11866581	Not Issued	20080079585	030	10/03/2007	APPARATUS FOR FIXING RFID TAGS	LEE,BENJAMIN	ITO, AKIRA

11909909	Not Issued		019	01/01/0001	METHOD FOR PRODUCTION OF BIOLOGICAL ORGANIC MATERIAL AND CULTURE VESSEL		ITO, AKIRA
11895473	Not Issued	0	030	08/24/2007	HIGH VOLTAGE DURABILITY TRANSISTOR AND METHOD FOR FABRICATING SAME	PURVIS,SUE	ITO, AKIRA
11889174	Not Issued	20080036033	030	08/09/2007	ONE-TIME PROGRAMMABLE MEMORY	PURVIS,SUE	ITO, AKIRA
09616389	6642505		250	07/14/2000	REFLECTION-TYPE OPTICAL SENSOR	PYO,KEVIN	ITO, AKIRA
09516064	6731414		150	03/01/2000	APPARATUS FOR PROCESSING OVERLAID IMAGE DATA	RAHIMI,IRAJ	ITO, AKIRA
09739752	6960819	20020074616	150	12/20/2000	SYSTEM AND METHOD FOR ONE-TIME PROGRAMMED MEMORY THROUGH DIRECT-TUNNELING OXIDE BREAKDOWN	DIAZ,JOSE	ITO, AKIRA
09735759	6489844	20010015673	150	12/13/2000	FEED-FORWARD AMPLIFIER AND CONTROLLER OF THE SAME	NGUYEN,KHANH	ITO, AKIRA
09728093	6561338	20010002645	150	12/01/2000	CARRIAGE CONVEYING APPARATUS	CRAWFORD,GENE	ITO, AKIRA
09664051	6431243		150	09/18/2000	LAMINATING APPARATUS	SELLS,JAMES	ITO, AKIRA
09570336	6311118		150	05/12/2000	VEHICLE SPEED CONTROL SYSTEM	ZANELLI,MICHAEL	ITO, AKIRA
09570414	Not Issued		161	05/12/2000	VEHICLE SPEED CONTROL SYSTEM	AVERY,BRIDGET	ITO, AKIRA
12314645	Not Issued		019	12/15/2008	RADIO BASE STATION, MOBILE STATION, AND COMMUNICATION METHOD		ITO, AKIRA
09925741	6676400	20020018823	150	08/10/2001	CONTROL UNIT OF A MOTOR FOR AN INJECTION MOLDING MACHINE	HEITBRINK,TIMOTHY	ITO, AKIRA
09842189	Not Issued	20020161454	161	04/26/2001	INFORMATION PROCESSING SYSTEM, INFORMATION PROCESSING APPARATUS, INFORMATION TERMINAL, AND METHOD FOR CONTROL THEREOF	CHANG,JUNGWON	ITO, AKIRA
12296893	Not Issued	0	017	10/10/2008	HIGH STRENGTH THICK STEEL PLATE SUPERIOR IN CRACK ARRESTABILITY		ITO, AKIRA
12340803	Not Issued		019	01/01/0001	RADIO COMMUNICATION APPARATUS AND CONTROL METHOD FOR RADIO COMMUNICATION SYSTEM		ITO, AKIRA
12289134	Not Issued	0	020	10/21/2008	STORAGE SYSTEM AND METHOD FOR OPERATING STORAGE SYSTEM		ITO, AKIRA
12262329	Not Issued		019	10/31/2008	WIRELESS COMMUNICATION DEVICE, EQUALIZER, COMPUTER-READABLE MEDIUM STORING PROGRAM FOR OBTAINING WEIGHT COEFFICIENTS IN THE EQUALIZER, AND PROCESS FOR OBTAINING WEIGHT COEFFICIENTS IN THE EQUALIZER		ITO, AKIRA

12262395	Not Issued	0	020	10/31/2008	WIRELESS COMMUNICATION DEVICE, EQUALIZER, COMPUTER-READABLE MEDIUM STORING PROGRAM FOR OBTAINING WEIGHT COEFFICIENTS IN THE EQUALIZER, AND PROCESS FOR OBTAINING WEIGHT COEFFICIENTS IN THE EQUALIZER		ITO, AKIRA
11810361	Not Issued	20080025778	030	06/05/2007	TAG-LABEL PRODUCING APPARATUS	NGUYEN,JUDY	ITO, AKIRA
11255009	7431117	20060090952	150	10/21/2005	STEERING CONTROL APPARATUS	YEAGLEY,DANIEL	ITO, AKIRA
11251779	Not Issued	20060087688	030	10/18/2005	SCAN APPARATUS CAPABLE OF IDENTIFYING USERS	COLES,EDWARD	ITOGAWA, AKIRA
11866767	Not Issued	20080250081	025	10/03/2007	PAGE-ADDED INFORMATION SHARING MANAGEMENT METHOD		ITOGAWA, AKIRA
11785550	Not Issued	20080260264	030	04/18/2007	METHOD AND SYSTEM FOR GENERATING AESTHETIC CHARACTERS, AND BUSINESS MODEL OF THE SAME	WERNER,BRIAN	ITOH, AKIRA
11868157	Not Issued	20080255522	030	10/05/2007	MEDICAL NEEDLE PULLER	CARPENTER,WILLIAM	ITOH, AKIRA
11661873	Not Issued	20080053188	041	03/05/2007	MOLD-CLAMPING FORCE DETECTION METHOD	KIRKLAND III,FREDDIE	ITOH, AKIRA
60192544	Not Issued		159	03/28/2000	MAGNETIC RECORDING MEDIUM, PRODUCTION PROCESS THEREOF, AND MAGNETIC RECORDING AND REPRODUCING APPARATUS		ITOH, AKIRA
09694846	Not Issued		161	10/23/2000	MAGNETIC RECORDING MEDIUM AND MAGNETIC RECORDING AND REPRODUCING DEVICE	BERNATZ,KEVIN	ITOH, AKIRA
09781982	Not Issued	20010022671	161	02/14/2001	IMAGE PROCESSING APPARATUS	THOMPSON,JAMES	ITOH, AKIRA
09954735	6435590	20020011737	150	09/18/2001	SEAT DEVICE OF A VEHICLE	ENGLE,PATRICIA	ITOH, AKIRA
09759675	6448712	20010008365	150	01/11/2001	HIGH-PRESSURE DISCHARGE LAMP	WILLIAMS,JOSEPH	ITOH, AKIRA
09618777	Not Issued		168	07/18/2000	A SEAT ARRANGEMENT OF A VEHICLE	ENGLE,PATRICIA	ITOH, AKIRA
60192546	Not Issued		159	03/28/2000	MAGNETIC RECORDING MEDIUM		ITOH, AKIRA
11921316	Not Issued	0	017	11/30/2007	MOLDING CONDITION SETTING METHOD		ITOH, AKIRA
11824526	Not Issued	20080000627	030	06/29/2007	HEAT EXCHANGER	LEO,LEONARD	ITOH, AKIRA

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Application#	Patent#	PG Pub#	Status	Date Filed	Title	Examiner Name	Inventor Name
10994533	Not Issued	20050120633	161	11/23/2004	GLASS RUN FOR VEHICLE	REDMAN,JERRY	ITO, AKIRA
11128285	Not Issued	20060153098	041	05/13/2005	WIRELESS COMMUNICATION SYSTEM AND TRANSMISSION DEVICE	BALAOING,ARIEL	ITO, AKIRA
11063980	7252318	20050218684	150	02/24/2005	SEAT DEVICE FOR VEHICLE	PEDDER,DENNIS	ITO, AKIRA
11049083	7140642	20050211496	150	02/03/2005	FUEL TANK DISPOSITION STRUCTURE OF VEHICLE	HURLEY,KEVIN	ITO, AKIRA
11067288	Not Issued	20050213543	061	02/28/2005	TRANSMITTING APPARATUS, RECEIVING APPARATUS, AND RE-TRANSMISSION CONTROL METHOD	PEACHES,RANDY	ITO, AKIRA
11078511	7009832	0	150	03/14/2005	HIGH DENSITY METAL-TO-METAL MAZE CAPACITOR WITH OPTIMIZED CAPACITANCE MATCHING	DINKINS,ANTHONY	ITO, AKIRA
11097190	7252319	20050230996	150	04/04/2005	SEAT DEVICE FOR VEHICLE	PEDDER,DENNIS	ITO, AKIRA
11132335	7009891	20050219889	150	05/19/2005	SYSTEM AND METHOD FOR ONE-TIME PROGRAMMED MEMORY THROUGH DIRECT-TUNNELING OXIDE BREAKDOWN	DIAZ,JOSE	ITO, AKIRA
11648651	7382024	20070108524	150	01/03/2007	LOW THRESHOLD VOLTAGE PMOS APPARATUS AND METHOD OF FABRICATING THE SAME	LEE,CALVIN	ITO, AKIRA
11261475	Not Issued	20060097507	095	10/31/2005	FUEL TANK ARRANGEMENT STRUCTURE FOR VEHICLE	HURLEY,KEVIN	ITO, AKIRA
11663706	Not Issued	20080181708	030	08/27/2007	TAPE CASSETTE AND TAPE PRINTER	NGUYEN,JUDY	ITO, AKIRA
12022547	Not Issued	0	025	01/30/2008	RESOURCE ALLOCATION METHOD, RESOURCE ALLOCATION PROGRAM AND RESOURCE ALLOCATION APPARATUS		ITO, AKIRA
12073938	Not Issued	20080229151	025	03/12/2008	ELECTRONIC CONTROL UNIT		ITO, AKIRA
12009705	Not Issued	20080181703	030	01/22/2008	PRINTER	NGUYEN,JUDY	ITO, AKIRA
11987335	Not Issued	20080130784	030	11/29/2007	CODING DEVICE, DECODING DEVICE, TRANSMITTER AND RECEIVER	GHAYOUR,MOHAMMAD	ITO, AKIRA

11984258	Not Issued	20080130804	030	11/15/2007	INTERFERENCE POWER ESTIMATING DEVICE AND INTERFERENCE POWER ESTIMATING METHOD	GHAYOUR,MOHAMMAD	ITO, AKIRA
10583142	Not Issued	20080022210	025	03/30/2007	WEDDING CEREMONY INFORMATION DISTRIBUTION SYSTEM		ITO, AKIRA
10593032	Not Issued	20070184497	093	09/15/2006	CLINICAL DIAGNOSTIC REAGENT AND DIAGNOSTIC METHOD FOR TESTING INFECTION OF ADULT TAENIA SOLIUM AND TAENIA SAGINATA	GRASER,JENNIFER	ITO, AKIRA
11226247	Not Issued	20060063252	161	09/15/2005	CELL CULTURE METHOD AND CELL SHEET	MITCHELL,LAURA	ITO, AKIRA
11094269	Not Issued	20050258482	041	03/31/2005	ANTI-FUSE DEVICE	MOVVA,AMAR	ITO, AKIRA
10526314	7050016	20050264466	150	03/02/2005	MATCHING UNIT AND RECEIVER APPARATUS USING THE SAME	HO,TAN	ITO, AKIRA
10409584	6770948	20030205777	150	04/09/2003	INTEGRATED FUSE WITH REGIONS OF DIFFERENT DOPING WITHIN THE FUSE NECK	WILSON,SCOTT	ITO, AKIRA
60459069	Not Issued		159	03/31/2003	HEAT THERAPY AGENT OF TUMOR COMPRISING CYTOCAIN AND MAGNETIC PARTICLES		ITO, AKIRA
60442984	Not Issued		159	01/27/2003	ENTERIC SUSTAINED-RELEASED FINE PARTICLES OF TAMSULOSIN OR ITS SALT AND MANUFACTURING METHOD THEREOF		ITO, AKIRA
10178230	6578618	20020166638	150	06/25/2002	LAMINATING APPARATUS	SELLS,JAMES	ITO, AKIRA
10115013	6580156	0	150	04/04/2002	INTEGRATED FUSE WITH REGIONS OF DIFFERENT DOPING WITHIN THE FUSE NECK	WILSON,SCOTT	ITO, AKIRA
11725332	Not Issued	20070222615	030	03/19/2007	RFID LABEL WITH INCREASED READABILITY OF PRINTED IMAGES	LEE,BENJAMIN	ITO, AKIRA
11730971	Not Issued	20070252401	161	04/05/2007	REAR BAGGAGE COMPARTMENT STRUCTURE OF VEHICLE	PAPE,JOSEPH	ITO, AKIRA
11702287	Not Issued	20070201934	030	02/05/2007	PRINT MEDIUM AND TAPE PRODUCING APPARATUS	CHAU,MINH	ITO, AKIRA
11143897	7076395	20050273295	150	06/03/2005	ANGLE DETECTION APPARATUS AND TORQUE DETECTION APPARATUS	KHUU,HIEN	ITO, AKIRA
11117507	Not Issued	20050191379	094	04/29/2005	MOLDING MACHINE AND CONTROL METHOD THEREOF	HEITBRINK,JILL	ITO, AKIRA
11055121	Not Issued	20050218683	161	02/11/2005	SEAT DEVICE FOR VEHICLE	PAPE,JOSEPH	ITO, AKIRA
11051631	7198918	20050130268	150	01/27/2005	NUCLEIC ACID ENCODING A HUMAN SERRATE-1 POLYPEPTIDE	MERTZ,PREMA	ITOH, AKIRA
11732097	Not Issued	20070227715	041	04/02/2007	HEAT EXCHANGER	WALBERG,TERESA	ITOH, AKIRA

10413932	7011137	20030228389	150	04/14/2003	MOLDING DEVICE	MCHENRY,KEVIN	ITOH, AKIRA
10188075	6995011	20030022375	150	07/03/2002	VECTOR FOR REVERSIBLE GENE INTEGRATION	GARVEY,TARA	ITOH, AKIRA
10172643	6609745	20020153740	150	06/13/2002	SEAT DEVICE OF A VEHICLE	ENGLE,PATRICIA	ITOH, AKIRA
11805146	Not Issued	20070289728	030	05/22/2007	HEAT EXCHANGER AND MOUNTING STRUCTURE OF THE SAME	LEO,LEONARD	ITOH, AKIRA
10598805	Not Issued	20070186586	030	09/12/2006	OVAL-CUT DIAMOND	RODRIGUEZ,RUTH	ITOH, AKIRA
10598801	Not Issued	20070186585	030	09/12/2006	OVAL-CUT DIAMOND	RODRIGUEZ,RUTH	ITOH, AKIRA
11788981	Not Issued	20070255213	030	04/23/2007	TUBE AND METHOD OF PRODUCING THE SAME	DUONG,THO	ITOH, AKIRA
11682925	7468058	20070219531	150	03/07/2007	SUCTION FLUID COLLECTOR FOR MEDICAL APPLICATIONS	TREYGER,ILYA	ITOH, AKIRA
11732476	Not Issued	20070235172	030	04/03/2007	HEAT TRANSFERRING MEMBER AND HEAT EXCHANGER HAVING THE SAME	LEO,LEONARD	ITOH, AKIRA
29278092	D558342		150	03/19/2007	THREE SLOT CRUCIFORM CATHETER SECTION	GOODMAN,ERIC	ITOH, AKIRA
11083791	7111664	20050205231	150	03/18/2005	MOLDING DEVICE	LIN,KUANG	ITOH, AKIRA
11043357	7179622	20050164348	150	01/27/2005	METHOD OF SUPPRESSING DIFFERENTIATION BY ADMINISTERING A HUMAN SERRATE-1 POLYPEPTIDE	MERTZ,PREMA	ITOH, AKIRA
29278087	D558341		150	03/19/2007	TWO SLOT CRUCIFORM CATHETER SECTION	GOODMAN,ERIC	ITOH, AKIRA
11051618	7253265	20050130271	150	01/27/2005	AN ANTIBODY AND A METHOD FOR PRODUCING AN ANTIBODY THAT SPECIFICALLY BINDS TO A FULL LENGTH AMINO ACID SEQUENCE OF HUMAN DELTA-1	MERTZ,PREMA	ITOH, AKIRA
11747464	7477475	20080002284	150	05/11/2007	HELICAL SCAN TYPE MAGNETIC TAPE REPRODUCTION APPARATUS AND MAGNETIC TAPE REPRODUCTION METHOD	WONG,KIN	ITOU, AKIRA
10363908	7092470	20030174781	150	03/07/2003	DATA TRANSFER METHOD, BLOCK SYNCHRONIZING SIGNAL DETECTING METHOD, AND REPRODUCING APPARATUS	PHU,PHUONG	ITOU, AKIRA

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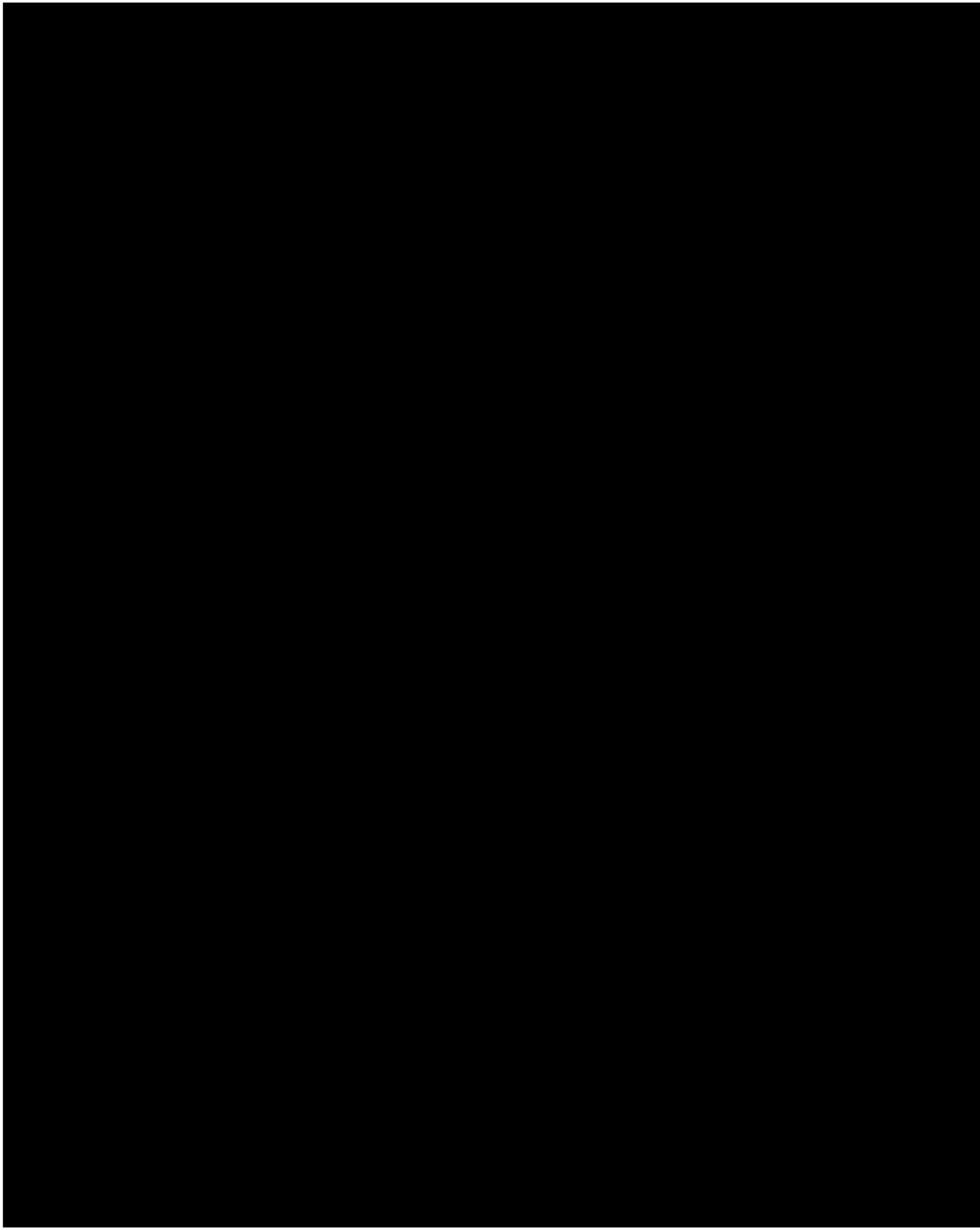

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Application#	Patent#	PG Pub#	Status	Date Filed	Title	Examiner Name	Inventor Name
10577399	Not Issued	20070084575	030	04/27/2006	COMPOSITE PAPYRACEOUS MATERIAL	FORTUNA,JOSE	FURUKAWA, MIKIO
09888418	6338424	20010035435	150	06/26/2001	AEROSOL CONTAINER	JACYNA,J	FURUKAWA, MIKIO

FURUKAWA MIKIO

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Application#	Patent#	PG Pub#	Status	Date Filed	Title	Examiner Name	Inventor Name
11247376	Not Issued	20060089488	061	10/11/2005	ANTIMICROBIAL PEPTIDES AND USE THEREOF	GUPTA,ANISH	YAMADA, YOSHINAO
10512299	7482328	20060057668	150	10/21/2004	ANTIMICROBIAL POLYPEPTIDE AND UTILIZATION THEREOF	GUPTA,ANISH	YAMADA, YOSHINAO
10577688	Not Issued	20070032431	071	04/28/2006	ANTIMICROBIAL PEPTIDES AND UTILIZATION OF THE SAME	GUPTA,ANISH	YAMADA, YOSHINAO
10577399	Not Issued	20070084575	030	04/27/2006	COMPOSITE PAPYRACEOUS MATERIAL	FORTUNA,JOSE	YAMADA, YOSHINAO

YAMADA YOSHINAO

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6. **polytetrafluoroethylene** -- Britannica Online Encyclopedia

Britannica online encyclopedia article on **polytetrafluoroethylene**:a strong, tough, waxy, nonflammable resin belonging to the family of organic polymers, **...**
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7. **polytetrafluoroethylene**

polytetrafluoroethylene manufacturers, producers, distributors, companies, organizations, service providers list.
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9. **Polytetrafluoroethylene**, What is **Polytetrafluoroethylene**? About **...**

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10. **polytetrafluoroethylene**: Definition from Answers.com

polytetrafluoroethylene n. A thermoplastic resin, (C 2 F 4) n , that is resistant to heat and chemicals, has an extremely low coefficient of.
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Polyimide

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Polyimide (sometimes abbreviated **PI**) is a polymer of imide monomers. The structure of imide is as shown.

Thermosetting polyimides are commercially available as uncured resins, stock shapes, thin sheets, laminates and machines parts. Thermoplastic polyimides are very often called *pseudothermoplastic*. There are two general types of polyimides. One type, so-called linear polyimides, are made by combining imides into long chains. Aromatic heterocyclic polyimides are the other usual kind, where R′ and R″ are two carbon atoms of an aromatic ring. Examples of polyimide films include Apical, Kapton, Norton TH and Kaptrex. Polyimide parts and shapes include Meldin, Vespel and Plavis. Polyimides have been in mass production since 1955. Typical monomer]]s include pyromellitic dianhydride and 4,4'-oxydianiline.

Contents [hide]

Polyimide	
Density	1430 kg/m^3
Young's modulus(E)	3200 MPa
Tensile strength($_t$)	75-90 MPa
Elongation @ break	4-8%
notch test	4-8 kJ/m
Glass temperature	>400 °C
melting point	none
Vicat B	220(?) °C[1]
Thermal conductivity (k)	0.52 W/m.K
linear expansion coefficient ()	5.5 10^{-5} /K
Specific heat (c)	1.15 kJ/kg.K
Water absorption (ASTM)	0.32
Dielectric constant (Dk) at 1MHz	3.5

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Properties [edit]

Thermosetting polyimides are known for thermal stability, good chemical resistance, excellent mechanical properties, and characteristic orange/yellow color. Polyimides compounded with graphite or glass fiber reinforements have flexural strengths of up to 50,000 p.s.i. and flexural moduli of 3 million p.s.i. Thermoset polyimides exhibit very low creep and high tensile strength. These properties are maintained during continuous use to temperatures of 450°F (232°C) and for short excursions, as high as 900°F (482° C). Molded polyimide parts and laminates have very good heat resistance. Normal operating temperatures for such parts and laminates range from cryogenic to those exceeding 500°F (260°C). Polyimides are also inherently resistant to flame combustion and do not usually need to be mixed with flame retardants. Most carry a UL rating of VTM-0. Polyimide laminates have a flexural strength half life at 480°F (249°C) of 400 hours.

Typical polyimide parts are not affected by commonly used solvents and oils — including hydrocarbons, esters, ethers, alcohols and freons. They also resist weak acids but are not recommended for use in environments that contains alkalis or inorganic acids. Some polyimides, such as CP1 and CORIN XLS, are solvent-soluble and exhibit high optical clarity. The solubility properties lend them towards spray and low temperature cure applications.

Application [edit]

Polyimide is often used in the electronics industry for flexible cables, as an insulating film on magnet wire and for medical tubing. For example, in a laptop computer, the cable that connects the main logic board to the display (which must flex every time the laptop is opened or closed) is often a polyimide base with copper conductors. The semiconductor industry uses polyimide as a high-temperature adhesive; it is also used as a mechanical stress buffer. Some polyimide can be used like a photoresist; both "positive" and "negative" types of photoresist-like polyimide exist in the market.

References [edit]

- Modern Plastic Mid-October Encyclopedia Issue, Polyimide, thermoset, page 146.

Notes [edit]

1. ^ Deformation temperature at 10kN needle load, source: A.K. vam der Vegt & L.E. Govaert, Polymeren,van keten tot kunststof, ISBN 90-407-2388-5

See also [edit]

- Polyamide

v • d • e	**Plastics** [hide]
Polyethylene (PE) · Polyethylene terephthalate (PET or PETE) · · Polyvinyl chloride (PVC) · Polyvinylidene chloride (PVDC) · Polylactic acid (PLA) · Polypropylene (PP) · Polybutylene (PB) · Polybutylene terephthalate (PBT) · Polyamide (PA) · **Polyimide** (PI) · Polycarbonate (PC) · Polytetrafluoroethylene (PTFE) · Polystyrene (PS) · Polyurethane (PU) · Polyester (PEs) · Acrylonitrile butadiene styrene (ABS) · Polymethyl methacrylate (PMMA) · Polyoxymethylene (POM) · Polysulfone (PES) · Styrene-acrylonitrile (SAN) · Ethylene vinyl acetate (EVA)	

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2. **Polyimides**

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3. DuPont Electronics : Kapton® **polyimide** film

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7. NASA - **Polyimide** Foam Named NASA Commercial Invention Of

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Dec 19, 2008 ... "**Polyimide** Foam" can be flexible or rigid, structural or non-structural and is highly durable. The foam's density can be varied for a ...
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8. (Manufacturing) **Polyimide** Tubing: Dispelling the Myths (MDT ...

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Polytetrafluoroethylene

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"Teflon" redirects here. For other uses, see Teflon (disambiguation).

In chemistry, **poly(tetrafluoroethylene)** or **poly(tetrafluoroethene)** (**PTFE**) is a synthetic fluoropolymer which finds numerous applications. PTFE is most well known by the DuPont brand name **Teflon**.

PTFE is a fluorocarbon solid, as it is a high molecular weight compound consisting wholly of carbon and fluorine. Fluorocarbons are not as susceptible to the London dispersion force due to the high electronegativity of fluorine. Therefore, water and water-containing substances, and oil and oil-containing substances, like most foods do not wet PTFE, as adhesion to PTFE surfaces is inhibited. Due to this property PTFE is used as a non-stick coating for pans and other cookware. It is very non-reactive, partly because of the strength of carbon–fluorine bonds and so it is often used in containers and pipework for reactive and corrosive chemicals. Where used as a lubricant, PTFE reduces friction, wear and energy consumption of machinery.

Polytetrafluoroethylene	
IUPAC name	Poly (tetrafluoroethene)
Systematic name	Poly (tetrafluoroethylene)
Other names	Teflon, Syncolon
Identifiers	
Abbreviations	PTFE
CAS number	9002-84-0
Properties	
Molecular formula	C_nF_{2n+2}
Density	2200 kg m^{-3}
Melting point	327 °C
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Contents [hide]

Structure and properties	n, ε_r, etc.
Thermodynamic data	Phase behaviour Solid, liquid, gas
Spectral data	UV, IR, NMR, MS

Except where noted otherwise, data are given for materials in their standard state (at 25 °C, 100 kPa)

Infobox references

History [edit]

PTFE was accidentally invented by Roy Plunkett of Kinetic Chemicals[1] in 1938.[2] While Plunkett was attempting to make a new CFC refrigerant, the perfluorethylene polymerized in its pressurized storage container. (In this original chemical reaction, iron from the inside of the container acted as a catalyst.) Kinetic Chemicals patented it in 1941 and registered the Teflon trademark in 1944.[3] The original patent number is US2,230,654.[4]

Teflon was first sold commercially in 1946. By 1950, DuPont had acquired full interest in Kinetic Chemicals and was producing over a million pounds (450 t) per year in Parkersburg, West Virginia. In 1954, French engineer Marc Grégoire created the first pan coated with Teflon non-stick resin under the brandname of Tefal after his wife urged him to try the material he had been using on fishing tackle on her cooking pans.[5] In the United States, Kansas City, Missouri resident Marion A. Trozzolo, who had been using the substance on scientific utensils, marketed the first frying pan, "The Happy Pan," in 1961.[6]

An early advanced use was in the Manhattan Project as a material to coat valves and seals in the pipes holding highly reactive uranium hexafluoride in the vast uranium enrichment plant at Oak Ridge, Tennessee, when it was known as K-25.

- Svenska
- Türkçe
- Укра•нська
- 中文

Properties [edit]

PTFE is often used to coat non-stick frying pans as it is not water-wettable and possesses fairly high heat resistance.

PTFE is a white solid at room temperature, with a density of about 2.2 g/cm³. According to DuPont its melting point is 327 °C (620.6 °F), but its properties degrade above 260 °C (500 °F).[7] PTFE gains its properties from the aggregate effect of carbon-fluorine bonds, as do all fluorocarbons.

The coefficient of friction of plastics is usually measured against polished steel.[8] PTFE's coefficient of friction is 0.1 or less[7], which is the second lowest of any known solid material (Diamond-like carbon being the first). PTFE's resistance to van der Waals forces means that it is the only known surface to which a gecko cannot stick.[9]

PTFE has excellent dielectric properties. This is especially true at high radio frequencies, making it suitable for use as an insulator in cables and connector assemblies and as a material for printed circuit boards used at microwave frequencies. Combined with its high melting temperature, this makes it the material of choice as a high-performance substitute for the weaker and lower melting point polyethylene that is commonly used in low-cost applications. Its extremely high bulk resistivity makes it an ideal material for fabricating long life electrets, useful devices that are the electrostatic analogues of magnets.

Because of its chemical inertness, PTFE cannot be cross-linked like an elastomer. Therefore it has no "memory," and is subject to creep (also known as "cold flow" and "compression set"). This can be both good and bad. A little bit of creep allows PTFE seals to conform to mating surfaces better than most other plastic seals. Too much creep, however, and the seal is compromised. Compounding fillers control unwanted creep and improve wear, friction, and other properties. Sometimes metal springs apply continuous force to PTFE seals to give good contact, while permitting some creep.

Due to its low friction, it is used for applications where sliding action of parts is needed: bearings, bushings, gears, slide plates, etc. In these applications it performs significantly better than nylon and acetal; it is comparable to ultra high-molecular weight polyethylene (UHMWPE), although UHMWPE is more resistant to wear than Teflon. For these applications, versions of teflon with mineral oil or molybdenum disulfide embedded as additional lubricants in its matrix are being manufactured.

Gore-Tex is a material incorporating fluoropolymer membrane with micropores. The roof of the Hubert H. Humphrey Metrodome in Minneapolis is one of the largest applications of Teflon PTFE coatings on Earth, using 20 acres (81,000 m^2) of the material in a double-layered, white dome, made with PTFE-coated fiberglass, that gives the stadium its distinctive appearance. The Millennium Dome in London is also substantially made of PTFE.

Powdered PTFE is used in pyrotechnic compositions as oxidizer together with powdered metals such as aluminium and magnesium. Upon ignition these mixtures form carbonaceous soot and the corresponding metal fluoride and release large amounts of heat. Hence they are used as infrared decoy flares and igniters for solid-fuel rocket propellants.[10]

PTFE is also used in body piercings, such as a sub-clavicle piercing, due to its flexibility and bio-compatibility.

In optical radiometry, sheets made from PTFE are used as measuring heads in spectroradiometers and broadband radiometers (e. g. illuminance meter and UV radiometer) due to its capability to diffuse a transmitting light nearly perfectly. Moreover, optical properties of PTFE stay constant over a wide range of wavelengths, from UV up to near infrared. In this region, the relation of its regular transmittance to diffuse transmittance is negligibly small so light transmitted through a diffuser (PTFE sheet) radiates like Lambert's cosine law. Thus, PTFE enables cosinusoidal angular response for a detector measuring the power of optical radiation at a surface, e.g., in solar irradiance measurements.

PTFE is also used to coat certain types of hardened, armor-piercing bullets, so as to reduce the amount of wear on the firearm's rifling. These are often referred to as "cop-killer" bullets by virtue of PTFE's supposed ability to ease a bullet's passage through body armor. However, this is simply an urban myth as PTFE has no effect in the bullet's ability to penetrate soft body armor, only on the ability to prevent damage to the weapon from firing very hard ammunition.[*citation needed*]

PTFE's low frictional properties have also been utilized as computer mice feet such as the Logitech G5 and Logitech G7 computer mice series from Logitech or most Razer gaming mice (e.g. the Deathadder, Lachesis). The low-friction provided by PTFE allows the mice to be moved and glide across surfaces smoothly and with less effort.

PTFE's high corrosion resistance makes it ideal for laboratory environments as containers, magnetic stirrers and tubing for highly

corrosive chemicals such as hydrofluoric acid, which will dissolve glass containers.

PTFE can be used as a thread seal tape in plumbing applications.

PTFE grafts can be used to bypass stenotic arteries in peripheral vascular disease, if a suitable autologous vein graft is not available.

PTFE can be used to prevent insects climbing up surfaces painted with the material. PTFE is so slippery that insects cannot get a grip and tend to fall off. For example PTFE is used to prevent ants climbing out of formicariums.

Safety [edit]

While PTFE itself is chemically inert and non-toxic, it begins to deteriorate after the temperature of cookware reaches about 260 °C (500 °F), and decompose above 350 °C (660 °F).[11] These degradation products can be lethal to birds, and can cause flu-like symptoms in humans.[11]

By comparison, cooking fats, oils, and butter will begin to scorch and smoke at about 200 °C (392 °F), and meat is usually fried between 200–230 °C (400–450 °F), but empty cookware can exceed this temperature if left unattended on a hot burner.

A 1959 study, (conducted before the U.S. Food and Drug Administration approved the material for use in food processing equipment) showed that the toxicity of fumes given off by the coated pan on dry heating was less than that of fumes given off by ordinary cooking oils.[12]

Carcinogens in production [edit]

The United States Environmental Protection Agency's scientific advisory board found in 2005 that perfluorooctanoic acid (PFOA), a chemical compound used to make Teflon, is a "likely carcinogen." This finding was part of a draft report that has yet to be made final.[13] DuPont settled for $300 million in a 2004 lawsuit filed by residents near its manufacturing plant in Ohio and West Virginia based on groundwater pollution from this chemical. Currently this chemical is not regulated by the EPA.

In January 2006, DuPont, the only company that manufactures PFOA in the US, agreed to eliminate releases of the chemical from

[14]

apply to not only PTFE used in cookware but also other products such as food packaging, clothing, and carpeting. DuPont also stated that it cannot produce PTFE without the use of the chemical PFOA, although it is looking for a substitute.

PFOA is used only during the manufacture of the product—only a trace amount of PFOA remains after the curing process. DuPont maintains that there should be no measurable amount of PFOA on a finished pan, provided that it has been properly cured.[15] A 2005 U.S. Food and Drug Administration (FDA) study detected PFOA in finished PTFE products including PTFE/Teflon cookware.[16] A February 2007 New York State Department of Health study detected PFOA in the gas phase coming from new nonstick cookware and microwave popcorn bags;[17] this research was funded by a 2005–2006 $17,700 grant from the Consumers Union.[18]

Similar polymers [edit]

Other polymers with similar composition are also known by the Teflon name:

- PFA (perfluoroalkoxy polymer resin)
- FEP (fluorinated ethylene-propylene)

Teflon is also used as the trade name for a polymer with similar properties, perfluoroalkoxy polymer resin (PFA).

They retain the useful properties of PTFE of low friction and non-reactivity, but are more easily formable. FEP is softer than PTFE and melts at 260 °C; it is highly transparent and resistant to sunlight.[19]

See also [edit]

- Gore-Tex
- Magnesium/Teflon/Viton
- Polymer fume fever

Footnotes [edit]

1. ^ history timeline

2. ^ Roy J. Plunkett. Chemical Heritage Foundation. Retrieved 10 September 2006.
3. ^ The story of Teflon
4. ^ US patent 2230654 Tetrafluoroethylene polymers
5. ^ Teflon History - Retrieved 15 October 2008
6. ^ TEFLON MAKER: OUT OF FRYING PAN INTO FAME - New York Times - 21 December 1986
7. ^ [a b] http://www2.dupont.com/Teflon_Industrial/en_US/tech_info/techinfo_compare.html Fluoropolymer Comparison - Typical Properties] www2.dupont.com. Retrieved 10 September 2006.
8. ^ Coefficient of Friction (COF) Testing of Plastics MatWeb Material Property Data Retrieved 1 January 2007.
9. ^ Research
10. ^ E.-C. Koch "Metal-Fluorocarbon Pyrolants:III. Development and Application of Magnesium/Teflon/Viton" Propellants Explosives Pyrotechnics (2002),27(5),pp. 262–266.
11. ^ [a b] DuPont, Key Questions About Teflon, accessed on 3 December 2007.
12. ^ Dale Blumenthal. "Is That Newfangled Cookware Safe?". Food and Drug Administration. Retrieved on 2006-05-20.
13. ^ "Perfluorooctanoic acid human health risk assessment review panel". Environmental Protection Agency. Retrieved on 2005-05-20.
14. ^ Juliet Eilperin (2006-01-26). "Harmful PTFE chemical to be eliminated by 2015", *Washington Post*. Retrieved on 10 September 2006.
15. ^ "About Teflon". DuPont. Retrieved on 2006-05-20.
16. ^ Begley TH, White K, Honigfort P, Twaroski ML, Neches R, Walker RA.: "Perfluorochemicals: potential sources of and migration from food packaging" Food Addit Contam. 2005 Oct;22(10):1023-31.
17. ^ Sinclair E, Kim SK, Akinleye HB, Kannan K.: "Quantitation of gas-phase perfluoroalkyl surfactants and fluorotelomer alcohols released from nonstick cookware and microwave popcorn bags" Environ Sci Technol. 2007 15 Feb;41(4):1180-5.
18. ^ ISI Web of Knowledge "ISI Highly Cited Researchers - A0213-2006-" Thomson ISI. Last updated 26 September 2006, (Accessed 25 October 2008).
19. ^ FEP Detailed Properties Parker-TexLoc, 13 April 2006. Retrieved 10 September 2006.

References [edit]

- Ellis, D.A.; Mabury, S.A.; Martin, J.W.; Muir, D.C.G. (2001). "Thermolysis of fluoropolymers as a potential source of halogenated organic acids in the environment". *Nature* **412** (6844): 321–324. doi:10.1038/35085548.

External links [edit]

- DuPont (2005). Teflon News and Information. Retrieved 7 October 2005.
- Plasma Processes and Adhesive Bonding of Polytetrafluoroethylene

v • d • e	**Health issues of plastics** [show]
Plasticizers: Phthalates	DIBP · DBP · BBP aka BBzP · DEHP aka DOP · DIDP · DINP · DIDP
Other plasticizers	Organophosphates · Adipate-based (DEHA · DOA)
Monomers	Bisphenol A (in Polycarbonates)
Other additives	PBDEs · PCBs · Organotins
Health issues	Teratogen · Carcinogen · Endocrine disruptor · Diabetes · Obesity
Miscellaneous	PVC · Plastic recycling · Plastic bottle · Vinyl chloride · Dioxins · Polystyrene · Styrofoam · **PTFE** (Teflon) · California Proposition 65 (1986) · List of environmental health hazards · Persistent organic pollutant · European REACH regulation (2006) · Japan Toxic Substances Law · Toxic Substances Control Act

v • d • e	**E.I. du Pont de Nemours and Company (DuPont)** [show]
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Products:	Corian · Kevlar · Mylar · Neoprene · Nomex · Nylon · Teflon · Tyvek
Subsidiaries and joint ventures:	Pioneer Hi-Bred · Solae · DuPont Danisco
Divisions and facilities:	DuPont Central Research · DuPont Experimental Station
Annual Revenue: $27.3 billion USD (▲1.3% FY 2004) · **Employees**: 60,000 · **Stock Symbol**: *Preferred stock*: NYSE: DDPRA, NYSE: DDPRB *Common stock*: NYSE: DD · **Website**: www.dupont.com	

v • d • e **Plastics** [show]

Polyethylene (PE) · Polyethylene terephthalate (PET or PETE) · · Polyvinyl chloride (PVC) · Polyvinylidene chloride (PVDC) · Polylactic acid (PLA) · Polypropylene (PP) · Polybutylene (PB) · Polybutylene terephthalate (PBT) · Polyamide (PA) · Polyimide (PI) · Polycarbonate (PC) · **Polytetrafluoroethylene** (PTFE) · Polystyrene (PS) · Polyurethane (PU) · Polyester (PEs) · Acrylonitrile butadiene styrene (ABS) · Polymethyl methacrylate (PMMA) · Polyoxymethylene (POM) · Polysulfone (PES) · Styrene-acrylonitrile (SAN) · Ethylene vinyl acetate (EVA)

Categories: Plastics | Fluoropolymers | Lubricants | DuPont | Dielectrics | Pyrotechnic oxidizers | DuPont products